

STATE WEATHER SERVICES.

A tabular summary of the more prominent climatological features of each State and Territory, as given in the reports for December by the directors of the respective State Weather Services, is presented in Table XII. This table gives for the whole area of any State: (a) the average departure from the normal values of the current monthly mean temperatures and total precipitations; (b) the maximum and minimum temperatures and precipitations; (c) the greatest and least monthly ranges of temperature occurring anywhere within the State. This table is essentially a summary of Table II, and therefore presents a somewhat different study of meteorological conditions from that given in Table I, which is based on regular Weather Bureau stations arranged in so-called climatic districts.

The following extracts are taken from the reviews published by the respective services; occasional notes in brackets are added by the Editor:

Alabama.—The weather in December was almost a repetition of the usual conditions, except in the last week, when a decided cold wave overspread the entire State, beginning on the afternoon of the 26th and continuing until the end of the month. Unusually low temperatures occurred on the mornings of the 28th and 29th, going as low as zero in the northern and central portions, and freezing conditions prevailed generally throughout the entire State, but without much ice in the navigable rivers.

Arizona.—The characteristic features of the month's weather were abnormally high average temperatures, an unusual proportion of cloudy days, and excessive precipitation.

California.—Special reports received from all portions of the State say that the excess of rain over the normal has put one of the brightest phases on the rural industries of this State that has been known for many years past, especially in the great San Joaquin Valley and in southern California. Thousands of acres will be plowed and sown to hay and grain which would never have been thought possible under less favorable circumstances. A great many new orchards will be set out. Feed was never better so early in the season than at present, and stock that was starving a few months ago in certain districts is now sleeking up and looking in first-class condition.

Colorado.—The average temperature for the month was about 2° below the December normal.

Florida.—During the first twenty-six days of the month the temperature, which was in excess at the beginning of December, continued to accumulate almost uninterruptedly until on the 27th a cold wave began to be felt; this increased in severity until the 29th, on which date the lowest temperatures since the beginning of observations by the Weather Bureau were recorded, the average minimum for the State being on that date about 5° lower than any previously registered. The temperature fell to 18° as far south as Titusville. This severe freeze practically destroyed nearly all that part of the orange crop remaining ungathered, estimated at about two or three millions of boxes, and did, it is feared, great damage to orange groves and fruit trees of all kinds. The temperature fell to 14° at Jacksonville, and 24° at Jupiter, and killing frosts occurred at all stations, except at Key West.

Georgia.—The month of December was unusually pleasant and mild, with no severe cold waves or storms until the 25th, when there was quite a marked change in the weather conditions; rainy and unsettled weather set in, followed on the 27th, 28th, and 29th by a severe cold wave which swept over the entire State, bringing the mercury down to zero in the most northerly districts and far below the freezing point in the extreme southern counties.

Idaho.—Clear and cold weather prevailed over the entire State at the opening of the month and until the 5th, from which date until the 11th moderately heavy snowfall was generally reported. The snowfall for the remainder of the month was light and widely scattered until the 15th, after which snowfall was reported over the greater portion of the State until the end of the month. The coldest period was from the 28th to the 29th.

Illinois.—The first number of "Weather and Crops," published by the Illinois State Weather Service says: "December was a most favorable and pleasant month until after Christmas, when rain and snow were followed by cold weather on the 27th. In many portions of the State fall plowing was not interrupted until this cold period. In all sections grain sown in the fall was reported in good condition on the first of the new year. The average temperature of the State was about 5° above the normal; the average rainfall was about one-quarter of an inch below the normal."

Indiana.—Warm, dry, and very pleasant weather during the greater portion of the month of December; on most days the daily mean temperature was excessive, and the average excess for the State was 2.4°. Precipitation was also slightly in excess. Good rains falling at the beginning of the month, and very much snow, ended the drought in the southern, but not so in the other portions. Pasturage had suffered much, but wheat is in better condition, having recovered somewhat, and it was protected by snow during the freezing days at the end of the month.

Iowa.—The month was unusually warm, dry, and pleasant. The only exceptionally severe weather was during the prevalence of the cold wave on the 26th to 28th. The average precipitation for the State was 0.70 of an inch below the normal for December. The amount of snowfall was unusually light.

Kentucky.—The average maximum temperature was a little in excess of the normal, but the average minimum was slightly below it. The warmest periods of the month were about the 1st, 7th to 12th, and 14th to 17th, while the coldest were from the 3d to the 5th, and 26th to 31st. On the 28th and 29th occurred one of the severest cold waves ever known in this State for that time of the year. Many stations report temperatures on the morning of the 29th ranging from 2° to 11° below zero. Fortunately this extremely low temperature was preceded by a heavy snowfall which remained upon the ground, and thus served as a protection for winter wheat, which would otherwise have suffered severely.

Louisiana.—Compared with normal conditions, deduced from the observations of the past seven Decembers, the weather in north Louisiana averaged nearly 2° colder during this month than usual, with a rainfall that was deficient by about 0.3 of an inch. In the southern half of the State a normal mean temperature prevailed, the days being about half a degree warmer than usual and the nights averaging about half a degree colder. The warmest weather occurred very generally on the 8th and 9th; the coldest days were the 26th, 27th to 29th, during which period minimum temperatures ranging between 5° and 15° were reported from the interior and northern parishes, and minima ranging between 20° and 30° occurred at stations along or near the Gulf coast. This cold wave was one of the most severe ever experienced in Louisiana, nearly equaling in intensity the general "freeze" of January, 1886. Ice formed as far south as the Gulf coast parishes, and there was a general destruction of vegetation, though it is reported that cane and orange trees showed no damage in the lower portion of Plaquemine parish. Considerable damage was done to orange trees, standing cane, and vegetation in the northern portion of the parishes bordering on the coast, while still farther inland there was a general "freezing up."

Maryland.—Monthly mean temperature for the month was 0.2° above the normal; precipitation, 0.84 above the normal; greatest fall of snow in Maryland, 22 inches, is reported by the observer at Oakland.

Michigan.—The mean temperature of the State for the month was 2.9° above the normal. Precipitation showed a deficiency of 1.18 inch.

Minnesota.—The monthly mean temperature for the State, as determined from 61 stations, was 6.8° warmer than usual. The minimum was 30° below zero at Leech Lake Dam on the 27th, and the lowest temperatures for the month at all stations occurred during the cold spell on the 26th, 27th, and 28th.

Mississippi.—The mean temperature for the month was 1.8° above the normal. The total precipitation averaged 0.94 inch below the normal. Snowfall, ranging from 4 inches in the extreme northern portion of the State to only a trace in the middle portion, occurred on the 28th, 29th, and 30th of the month. The following special report was received from Leakesville, Miss.:

"A cyclone passed over the northeast portion of the county on the 11th. It struck the premises of Mr. G. Cochran, blew down his dwelling, carried off all the household furniture, etc.; also demolished five outhouses, killed five head of horses and mules, destroyed 200 bushels of corn and a good many meat hogs and cattle. The storm destroyed many thousand dollars' worth of timber."

Missouri.—From the beginning of the month until the 24th the temperature was above the normal generally, except on the 2d, 3d, and 4th, the average daily excess amounting to about 6° in the southern and 8° in the northern sections. The weather was pleasant for outdoor work, and in some sections plowing was continued until the 26th. On the 26th and 27th there was a heavy fall of snow over the extreme southeastern counties, and during the 27th and 28th an area of unusually high pressure passed over the State, accompanied by a severe cold wave, the temperature falling to zero or below at nearly all stations on the morning of the 28th. Stock water is still very scarce in many of the central and northern counties. Average precipitation for the State only 0.03 of an inch below the normal.

New England.—Eight cyclones and seven anticyclones influenced the weather for the month. Of the former five passed eastward to the north of New England, one faded away as it approached our district, one was formed over southern New England, moving northeasterly, and one passed across our district from north to south. The last named was the severest of the month and was accompanied by damaging gales and heavy snow and rain. It moved from the Gulf of Mexico on the 24th, passed up the coast and northerly over New England on the 26-27th. The last anticyclone for the month spread from the northwest toward the southeast and covered all the southern and eastern parts of the country. It gave very high barometer readings and a sharp cold wave. It was not unusually severe in New England. In many parts of Connecticut the month was very mild, the observer at Norwalk reporting that the ground was entirely free from frost up to the 17th and that much plowing was done. He states that he put in a full day with the plow himself on the 17th, with not a particle of frozen earth to be found. The last part of the month was very cold in all sections.

New Mexico.—The average temperature for the month was slightly above the normal. The warmest period of the month was about the 20th and the coldest from the 26-28th. There was more cloudy weather than usual for December. The precipitation averaged a little above the normal, but was

very unevenly distributed, being heaviest in the north-central part. The greatest total snowfall for the month was 17 inches at Winsor's Ranch, on the headwaters of the Pecos River, and 25 inches at Chama. All other stations report little or no snowfall.

North Carolina.—December was nearly normal in its chief features. During the greater part, from the 1st to 27th, the temperature was decidedly above the normal, the warmest days occurring on the 2d, 12th, 17th, and 22d, but the severe cold wave of the latter part of the month reduced the mean very considerably. The low temperatures recorded on the morning of the 29th were probably never before equaled in this State in December, though lower temperatures have occurred in January.

North Dakota.—The only unusual feature that characterized this month was its mildness. The temperature was unusually high, the winds light, and but little precipitation fell, and although there was a cold wave on the 26th, 27th, and 28th, it was not severely felt and soon passed away. On the 20th a very unusual occurrence was a thunderstorm in the southern portion of the State, something the people who have lived in that section a long time report not to have happened before. In the northern part of the State on the same day there was a rainstorm, something as unusual as the thunderstorm. The temperature at Bismarck averaged 8.4° higher for each day of the month than the normal or mean obtained from eighteen years' observations.

Ohio.—The month averaged slightly warmer than usual over the State. Up to the 25th temperatures ranged considerably above the normal; on that day the entrance of a severe cold wave, rapidly developing from the northwest, constantly lowered the temperature until the 29th, when it culminated below zero temperature over all sections of the State. The precipitation during the month was well distributed and was in excess of the average. The heaviest snowfall occurred on the 28th in advance of the cold wave from the northwest, covering the ground completely and affording ample protection from the severe cold that followed to the winter cereals in the ground. The percentage of weather forecasts received from Washington and distributed to 119 points over the State was 98 for temperature and 92 for weather. The cold-wave warnings of the latter part of the month were widely distributed and amply justified, and have no doubt proved of great value to all communities over the State where received.

Oklahoma.—The month was remarkably mild and pleasant until the afternoon of the 25th when a cold wave of considerable force began and continued until the close of the month. The maximum degree of cold was reached at 7 a. m. of the 28th, when the temperature was 1° below zero. The first snow of the season occurred on the 26th. The month closed leaving the ground prac-

tically without moisture, and wheat in bad shape. Farmers generally state that most of the roots are dried up and the germs without life.

South Carolina.—The month was remarkable chiefly for its extreme range of temperature, between 1° below zero and 85° above within the State. From available records it appears that the total snowfall during the month was the greatest ever recorded, especially in the north-central portion of the State, where in places it fell to a depth of 10 inches.

South Dakota.—The weather was unusually mild during the first two decades of the month. Comparatively little snow fell, and this, together with the generally mild and pleasant weather, was very favorable to live stock, which fed uninterruptedly on the ranges.

Tennessee.—While the mean temperature of the month was but little below the normal, several extremes occurred at intervals, the most noted of which was the cold wave of the 28–29th, causing abnormally low temperatures at most places on those dates. Owing to the fact that the ground was well covered with snow wheat suffered little or no damage. The warmest day during the month was the 8th and the coldest the 28th.

Virginia.—The temperature averaged very slightly below the normal in the northern portions of the State and slightly above in the interior, southern, and eastern. The coldest periods were the 5–7th, 18th–21st, and last six days of the month, with a very decided and sudden cold wave on the 28th and 29th, which gave the coldest temperature for the calendar year throughout the State, with temperatures of between zero and 11° below zero in the western portions of the State. The snow about the 26th proved of great value to winter crops, by affording protection during the severe cold wave of 28–29th, and from 1 to 4 inches of snow were still on the ground at the end of the month in the southwest and the valley.

Washington.—The month was noteworthy for its low mean temperature, which was about 4° below the normal, and for its deficiency in precipitation of about 1½ inch. The last nine days of the month were remarkably pleasant. A remarkably severe low-area storm prevailed over the coast from the 6th to the 11th, when the barometer touched the lowest point in recent years. There was considerable snow, particularly in the eastern part of the State. The coldest day was generally the 28th.

Wisconsin.—The month was remarkably mild. Up to the 24th there was very little frost in the ground and the farmers were plowing up to that date. A cold wave passed over the State about the 5th and another on the 14–16th, upon which dates the temperature fell below zero, while the warmest day occurred on the 20th. From the 24th to the end of the month the weather was cold and little or no snow lay on the ground.

NOTES BY THE EDITOR.

TEMPERATURE OF THE WATER, SEBAGO LAKE, NEAR PORTLAND, MAINE.

A record of the temperature of the water as it flows from Sebago Lake into the aqueduct that supplies the city of Portland, Me., has been kept by the gatekeeper, Mr. J. W. Hinkley. The following monthly averages corrected for the small thermometer errors have been kindly communicated by Mr. John M. Gould of that city:

1894.	°	1894.	°
January	34.5	August	74.8
February	34.5	September	65.5
March	35.1	October	56.2
April	37.3	November	46.7
May	46.0	December	37.9
June	59.3		
July	71.0	Annual	49.9

The ice went out of the lake April 18. The lake was frozen over December 30; it was therefore open 226 days.

BALLOON ASCENSION, DECEMBER 4, 1894.

On December 4, 1894, Dr. A. Berson, starting from Berlin, made a high ascension whose results, as given by Mr. O. Chanute in "Aeronautics," are of interest in connection with the area of high pressure then advancing westward over Europe.

The balloon started at 10.28 a. m., with a charge of 70,600 cubic feet of water gas. A strong east wind had been blowing during the preceding afternoon and night, but had diminished somewhat in the morning. The drag line, 650 feet long and weighing 180 pounds, was stretched on the ground in the direction of the wind in order that its weight might be taken up gradually as the balloon rose, thus insuring a very rapid rise at the start and consequent escape from interfering obstacles. The general trend of the voyage was toward the

northwest. The ascent occupied three hours and the descent two hours and twenty minutes. The landing occurred at 3.45 p. m., a short distance west of Kiel. The following abstract of the observations is reported:

Time.	Altitude.	Temperature.	Remarks.
	Feet.	° F.	
10.40 a. m.	4,900	41	Up to this point the temperature had risen steadily.
10.43 a. m.	6,500	.....	Fog and clouds below the balloon.
11.30 a. m.	16,400	0	Air very dry.
11.49 a. m.	19,700	—14	
12.00 m.	22,150	—20	
12.25 p. m.	26,250	—38	
.....	26,900	.....
.....	27,900	—43	
.....	29,500	.....	Balloon cuts through a thin veil or stratum of cirrus clouds consisting of perfectly formed flakes of snow and not simple ice crystals.
12.45 p. m.	30,000	.....	The altitude as indicated on the aneroid barometer, which stood at 9.12 inches, was 31,500, but when properly corrected the actual height was 30,000. The mercurial barometer had already frozen at about noon, when the actual temperature was —20. This was the highest point reached; the balloon was covered with a thin envelope of snow; the sky was free of clouds and of a pure cold blue. The aeronaut was in good condition, having been sustained by inhalation from a special supply of oxygen. A further ascent was not considered advisable in view of the small amount of ballast remaining.
1.26 p. m.	29,850	—52	Small gas valve opened and descent began.
3.40 p. m.	4,600	43	This was the highest temperature during the descent.
.....	1,650	.....	Swimming on the upper surface of the cloud-waves.
.....	820	.....	At the lower surface of the clouds the earth appears.
3.45 p. m. ....	.....	34	On ground.

Among the results of the voyage the following may be stated:

1. The attainment of great altitude.
2. Observations of uncommonly low temperatures and many wide variations of temperature.
3. The increase of temperature up to 41° at 4,900 feet at 10.40 a. m., and up to 43° at 4,600 feet at 3.40 p. m., showing